

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

- 1 1. (Original) A resonant circuit, comprising:
  - 2 a transformer having a primary winding, a first secondary winding, and a feedback
  - 3 secondary winding, wherein the first secondary winding is electrically connected to the primary
  - 4 winding with a node at AC ground disposed between the first secondary winding and the primary
  - 5 winding; and
  - 6 a balance inductor coupled to the first secondary winding,
  - 7 wherein the feedback secondary winding is coupled to the balance inductor such that the
  - 8 feedback secondary winding, the balance inductor and the first secondary winding provide a
  - 9 circuit path, and the feedback secondary winding can provide a feedback path for a feedback
  - 10 signal to an input rectifying circuit.
- 11
- 12 2. (Original) The circuit according to claim 1, wherein the first secondary winding has
- 13 an impedance that is substantially equivalent to an impedance of the feedback secondary
- 14 winding.
- 15
- 16 3. (Original) The circuit according to claim 2, wherein, during circuit operation,
- 17 voltages across the first secondary winding and the feedback secondary winding substantially
- 18 cancel each other such that a voltage across the balance inductor is provided to the input
- 19 rectifying circuit on the feedback path.
- 20
- 21 4. (Original) The circuit according to claim 1, further including a series capacitor
- 22 coupled in series with the feedback secondary winding.
- 23
- 24 5. (Original) The circuit according to claim 4, wherein the series capacitor and the
- 25 balance inductor provide a series resonant circuit.

1 6. (Original) The circuit according to claim 1, further including a first circuit loop that  
2 includes the primary winding, the first secondary winding, the balance inductor, at least one pair  
3 of lamp terminals for receiving a lamp, and a second secondary winding.

4

5 7. (Original) The circuit according to claim 1, wherein an AC ground is located  
6 between the feedback secondary winding and the input rectifying circuit when the circuit is  
7 energized and the load is removed.

8

9 8. (Original) The circuit according to claim 2, wherein the balance inductor provides a  
10 substantially sinusoidal line current waveform.

11

12 9. (Original) The circuit according to claim 1, further including a plurality of lamp  
13 terminal pairs connected between the primary winding and the balance inductor.

14

15 10. (Original) The circuit according to claim 1, wherein the feedback signal provides a  
16 current that is proportional to a load current.

17

18 11. (Original) The circuit according to claim 1, wherein a line current remains  
19 substantially sinusoidal as a load changes due to removal/addition of lamps.

20

21 12. (Cancelled)

22

23 13. (Cancelled)

24

25 14. (Original) The circuit according to claim 1, wherein the circuit includes a voltage  
26 doubler to receive the feedback signal.

27

28 15. (Original) The circuit according to claim 1, wherein the circuit includes a full wave  
29 rectifier circuit to receive the feedback signal.

1 16. (Original) The circuit according to claim 1, further including a first input terminal, a  
2 second input terminal for receiving a first input signal, and a third input terminal for receiving a  
3 second input signal, a first signal detector for detecting the first input signal, a second signal  
4 detector for detecting the second input signal, a first lamp group control circuit coupled to the  
5 first signal detector for controlling a first lamp group, a second lamp group control circuit  
6 coupled to the second signal detector for controlling a second lamp group, wherein the first and  
7 second lamp control circuits independently control the respective first and second lamp groups  
8 based upon a presence of the respective first and second input signals.

9

10 17. (Original) The circuit according to claim 16, wherein the first lamp control circuit is  
11 coupled to the balance inductor.

12

13 18. (Original) The circuit according to claim 17, further including a single ballast  
14 adapted for coupling to first and second lamp switches to independently control the first and  
15 second lamp groups.

16

17 19. (Original) A lamp ballast circuit, comprising:  
18 a resonant inverter including

19 a transformer having a primary winding, a first secondary winding and a feedback  
20 secondary winding, wherein the primary winding corresponds to a resonant inductive element of  
21 the resonant inverter, the first secondary winding being electrically coupled to an end of the  
22 primary winding such that voltages on the primary winding and the first secondary winding are  
23 adapted for being additively applied across a load; and

24 a balance inductor coupled between the first secondary winding and the feedback  
25 secondary winding,

26 wherein the feedback secondary winding is adapted to provide a feedback signal on a  
27 feedback path to an input rectifying circuit.

1 20. (Original) The ballast according to claim 19, wherein the first secondary winding the  
2 feedback secondary windings have substantially equivalent impedances to cancel respective  
3 voltages.

4

5 21. (Original) The ballast according to claim 21, wherein the balance inductor provides a  
6 substantially sinusoidal waveform to the input rectifying circuit.

7

8 22. (Original) The ballast according to claim 19, further including a plurality of lamp  
9 terminal pairs coupled between a second secondary winding and the balance inductor.

10

11 23. (Original) The ballast according to claim 19, further including a first circuit loop  
12 having the primary winding, the first secondary winding, the balance inductor, a plurality of  
13 lamp terminal pairs connected in parallel, and a second secondary winding.

14

15 24. (Original) The ballast according to claim 23, further including a first circuit path  
16 extending from the rectifier circuit through a series capacitor and the feedback secondary  
17 winding, wherein the feedback secondary winding is connected to the balance inductor.

18

19 25. (Original) A method of providing feedback in a resonant circuit, comprising:  
20 connecting in a first circuit loop a primary winding, a first secondary winding, a balance  
21 inductor, and at least a pair of lamp terminals; and  
22 connecting a feedback secondary winding to a rectifier circuit to provide a feedback  
23 signal on a feedback path from the first circuit loop to the rectifier circuit.

24

25 26. (Original) The method according to claim 25, further including selecting respective  
26 impedances for the first and feedback secondary windings that substantially cancel each other.

27

28 27. (Original) The method according to claim 26, further including selecting an  
29 impedance for the balance inductor to generate a substantially sinusoidal signal on the feedback  
30 path.

1 28. (Original) The method according to claim 25, further including providing a THD of  
2 less than about 10 percent.

3

4 29. (Original) The method according to claim 25, further including connecting a series  
5 capacitor in the feedback path.

6

7 30. (Original) The method according to claim 25 further including providing an AC  
8 ground at a point between the rectifier and the feedback secondary winding, whenever the circuit  
9 is activated and the load is removed.

10

11 31. (Original) The method according to claim 25, further including providing a voltage  
12 doubler configuration for the rectifier circuit.

13

14 32. (Original) The method according to claim 25, further including coupling a first lamp  
15 group control circuit to the first circuit loop to control a first group of lamps.

16

17 33. (Original) The method according to claim 32, further including coupling a second  
18 lamp group control circuit to the first circuit loop to control a second group of lamps  
19 independently from the first group of lamps.

20

21 34. (Original) The method according to claim 33, further including providing a first  
22 signal corresponding to a presence of a signal on a first input terminal to the circuit to the first  
23 lamp group control circuit.

24

25 35. (Original) The method according to claim 34, further including providing a second  
26 signal corresponding to a presence of a signal on a second input terminal to the circuit to the  
27 second group control circuit.

1 36. (Original) A method of providing feedback in a ballast, comprising:

2       providing a resonant circuit including a resonant inductive element having a primary

3       winding with first and second ends;

4       providing a first secondary winding having first and second ends and coupling the first

5       end of the primary winding to the first end of the first secondary winding;

6       providing a second secondary winding having first and second ends and coupling the

7       second end of the primary winding to the first end of the second secondary winding;

8       providing a balance impedance having first and second end and coupling the first end of

9       the balance inductor to the second end of the first secondary winding;

10       providing a third secondary winding having first and second ends and coupling the

11       second end of the third secondary winding to the second end of the balance impedance, wherein

12       the first end of the third secondary winding is adapted for coupling to a rectifier circuit to

13       provide a feedback signal;

14       providing at least one pair of lamp terminals comprising first and second lamp terminals

15       to energize a lamp and coupling the second lamp terminal to the second end of the balance

16       inductor and coupling the first lamp terminal to the second end of the second secondary winding.

17

18 37. (Original) The method according to claim 36, further including providing a first AC

19       ground at the first end of the primary winding.

20

21 38. (Original) The method according to claim 37, further including providing a second

22       AC ground at the first end of the third secondary winding, whenever the circuit is activated and

23       the load removed.